IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: William S. Somers, et al.

Serial No.: 10/090,879

Filed: March 4, 2002

JIL 2 9 2002

For: Crystal Structure of E. Coli GDP-Fucose Synthetase (and Complexes Thereof) and Methods of Identifying Agonists and Antagonists Using Same

Attorney Docket No.: GFN-5321DV

Commissioner for Patents Washington, D.C. 20231

Group Art Unit: 1631

Examiner:

RECEIVED

AUG 0 1 2002

TECH CENTER 1600/2900

COPY OF PAPERS
ORIGINALLY FILED

Certificate of First Class Mailing (37 CFR §1.8(a))

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on the date set forth below.

Date of Signature and of Mail Deposit

By:

Lisa M. DiRocco, Lsq. Reg. No. P-51,619

Attorney for Applicants

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

For the Examiner's convenience in reviewing this divisional application, Applicants submit a consolidated PTO Form 1449, listing all references cited during the prosecution of the parent application. The present application is a Divisional Application of U.S. Serial No. 09/373,432, filed August 13, 1999 (Atty. Docket No. GFN-5321). All references listed on the enclosed PTO Form 1449 have been previously cited by or submitted to the Office in the prior application, and, in accordance with 37 CFR §1.98(d), copies of these references are not enclosed herewith, but will be provided upon request. In addition, copies of references cited in a Partial

Serial Number: 10/090,879 Page -2- Group Art Unit: 1631

European Search Report mailed May 5, 2002, during the prosecution of EP 99941121.8, which corresponds to the above referenced application, have been enclosed. In accordance with 37 CFR §1.97(b)(3), Applicants hereby submit these publications for the Examiner's consideration.

This statement is not to be interpreted as a representation that the cited publications are material, that an exhaustive search has been conducted, or that no other relevant information exists. Nor shall the citation of any publication herein be construed *per se* as a representation that such publication is prior art. Moreover, Applicants understand that the Examiner will make an independent evaluation of the cited publications.

Under 37 C.F.R. § 1.97(b)(3), no additional costs are believed to be due in connection with the filing of this disclosure. If, however, a first Office Action on the merits issues in this application bearing a mailing date prior to the date of this Information Disclosure Statement, please charge the appropriate fee as required under 37 CFR §1.17(p) to our Deposit Order Account No. 12-0080.

Respectfully submitted, LAHIVE & COCKFIELD, LLP

Lisa M. DiRocce, Esq. Registration No. P-51,619 Attorney for Applicants

28 State Street Boston, MA 02109 (617) 227-7400

AEM/LMD/ipc Enclosures





28 STATE STREET

BOSTON, MASSACHUSETTS 02109-1784

TELEPHONE (617) 227-7400

FAX (617) 742-4214

Ic@lahive.com

THOMAS V. SMURZYNSKI RALPH A. LOREN GIULIO A. DeCONTI, JR. ANN LAMPORT HAMMITTE ELIZABETH A. HANLEY AMY BAKER MANDRAGOURAS ANTHONY A. LAURENTANO KEVIN J. CANNING JANE E REMILIARD DeANN FORAN SMITH PETER C. LAURO JEANNE M. DIGIORGIO DEBRA J. MILASINCIC, Ph.D. DAVID J. RIKKERS DAVID R. BURNS JOHN S. CURRAN

CYNTHIA L. KANIK, Ph.D.
MEGAN E. WILLIAMS, Ph.D.
RICHA NAND
MICHAEL PHILLIPPS *
LISA M. DIROCCO
HATHAWAY P. RUSSELL **
MARIA LACCOTRIPE ZACHARAKIS, Ph.D
PETER A. DIMATTIA
VINCENT P. LOCCISANO
MERIDETH C. ARNOLD

SENIOR COUNSEL JAMES E. COCKFIELD

OF COUNSEL
JEREMIAH LYNCH
WILLIAM A. SCOFIELD, JR.
SIBLEY P. REPPERT

PATENT AGENTS
THEODORE R. WEST
SHAYNE Y. HUFF, Ph.D.
DANIEL B. KO

TECHNICAL SPECIALISTS
CYNTHIA M. SOROOS
PETER W. DINI, Ph.D.
EUIHOON LEE
JENNIFER K. ROSENFIELD
ALLAN TAMESHTIT, Ph.D.
CATHERINE E. McPHERSON
ERIC F. WAGNER, Ph.D.
SHAHID HASAN, Ph.D.
JACOB G. WEINTRAUB
JONATHAN M. SPARKS, Ph.D.
CRISTIN E. HOWLEY, Ph.D.

Admitted in NY only
 Admitted in TX only

RECE. 2002

AUG 0 1 2002 July 22, 2002

TECH CENTER 1600/2900

Commissioner for Patents
Washington, D.C. 20231
TECH CENTER 160

Re: U.S. Patent Application No.: 10/090,879

For: Crystal Structure of E. Coli GDP-Fucose Synthetase (and Complexes Thereof) and Methods of Identifying Agonists and Antagonists Using Same

Inventors: William S. Somers, et al.

Filed: March 4, 2002

Our Ref. No.: GFN-5321DV

Dear Sir:

COPY OF PAPERS ORIGINALLY FILED

I enclose herewith for filing in the above-identified application the following:

- 1. Information Disclosure Statement;
- 2. PTO Form 1449;
- 3. Copy of a reference cited in PTO Form 1449 (1);
- 4. A copy of the Partial European Search Report; and
- 5. A Return Postcard.

No additional costs are believed to be due in connection with the filing of this Supplemental Information Disclosure Statement. However, please charge any other necessary fees due in connection with the enclosed statement to our Deposit Order Account No. 12-0080. For this purpose, a duplicate of this sheet is attached.

I hereby certify that this correspondence is deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on:

Lisa M. DiRocco, Esq. Registration No. P-51,619

Respectfully submitted,

LAHIVE & COCKFIELD, LLP

Lisa M. DiRocco, Esq. Registration No. P-51,619 Attorney for Applicants

6,4 -	.c.]
" w s a	APPLICANT
A PAGE 1	DENIE

FACSIMILE OF FORM PTO-1449

U.S. DEPARTMENT OF ,COMMERCE PATENT AND TRADEMARK OFFICE

ATT BOOKET NO	
GFN-5321DV	
	۰

10/090,879

T OF PUBLICATIONS CITED BY APPLICANT (Use several sheets if necessary)

William S. Somers et GROUP 1631 March 4, 2002

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE NAME		CLASS	SUBCLASS	FILING DATE	
	A1	5,853,973	12/98	Kakefuda et al.	435	4		

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSL	ATION
L						YES	NO

OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

	OTTENO (moldaling flathor, flate, bate, forther agos, bio.)
A2	Abrahams, J.P. et al., "Methods used in the structure determination of bovine mitochondrial F1 ATPase," <i>Acta Cryst.</i> , D52:30-42 (1996)
A3	Andersson, A. et al., "Crystal structure of the ternary complex of 1,3,8-trihydroxynaphthalene reductase from Magnaporthe grisea with NADPH and an active-site inhibitor," <i>Structure</i> , 4(10):1161-70 (1996)
A4	Andrianopoulos, K. et al., "Identification of the fucose synthetase gene in the colartic acid gene cluster of Escherichia coli K-12," <i>J. Bacteriol.</i> , 180(4):998-1001 (1998)
A5	Bauer, A.J. et al., "The molecular structure of UDP-galactose 4-epimerase from Escherichia coli determined at 2.5 A resolution," <i>Proteins</i> , 12(4):372-81 (1992)
A6	Bonin, C. P. et al., "The MUR1 gene of Arabidopsis thaliana encodes an isoform of GDP-D-mannose-4,6-dehydratase, catalyzing the first step in the de novo synthesis of GDP-L-fucose," Proc Natl Acad Sci U S A, 94(5):2085-90 (1997)
A7	Branden, C. et al., "Determination of protein structures," in Introduction to Protein Structure, Garland Publishing, Inc. Chapter 17 pp. 269-285 (1991)
A8	Breton, R. et al., "The structure of a complex of human 17beta-hydroxysteroid dehydrogenase with estradiol and NADP+ identifies two principal targets for the design of inhibitors," <i>Structure</i> , 4(8):905-15 (1996)
A9	Broschat, K.O. et al., "Purification and characterization of GDP-D-mannose 4,6-dehydratase from porcine thyroid," <i>Eur. J. Biochem.</i> , 153(2):397-401 (1985)
A10	Chang, S. et al., "An epimerase-reductase in L-fucose synthesis," <i>J. Biol. Chem.</i> , 263(4):1693-7 (1988)
A11	De La Fortelle, E. de et al., "Maximum-likelihood heavy atom parameter refinement for multiple isomorphous replacement and multiwavelength anomalous diffraction methods," <i>Methods Enz.</i> , 276(part B):472-494 (1997)
A12	Ensor, C.M. et al., "Bacterial expression and site-directed mutagenesis of two critical residues (tyrosine-151 and lysine-155) of human placental NAD(+)-dependent 15-hydroxyprostaglandin dehydrogenase," <i>Biochim. Biophys. Acta</i> , 1208(1):151-6 (1994)
Examiner	Date Considered

*EXAMINER:

Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line bough citation if not in conformance and not considered. Include copy of this form with next conformation to applicant.

APPI ICAN	IT FACO	MILE OF FORM PTO-1449	• 116	DEPARTMENT OF	ATTY DOCKET NO			et 2 of 5				
REV 7-80	II PAUS	,	·cor	MERCE ENT TO TRUCEMENT OFFICE	GFN-5321DV			9				
LIS	ST C	F PUBLICATIONS (Use several shee	CITED P	APPLICANT	APPLICANT							
		(Use several snee	ts if nece	28 200	William S. Some	's et	Sheet 2 of 5 SERIAL NO. 10/090,879 RECEIVE GROUP 1631 AUG 0 1 200 FILING DATE IF APPROPRIATE SUBCLASS TRANSLATION YES NO 38 of human placental e results in an inactive ovel leukocyte adhesion Pyridine Nucleotide al. (Eds.) pp. 461-511,					
			\ \	<u> </u>	March 4, 2002		1631 д	UG 0 1 20				
			U	S. CETEN DOC	UMENTS		TECH	CENTED 16				
EXAMINER INITIAL		DOCUMENT NUMBER	DATE		NAME	CLASS		FILING DATE				
			FOR	EIGN PATENT DO	OCUMENTS							
···	T	DOCUMENT NUMBER	DATE	···	COUNTRY	CLASS	SUBCLASS	TRANSLATION				
	_		ļ	ļ	<u> </u>			YES NO				
	٠		<u> </u>	<u> </u>			<u> </u>	<u></u>				
		OTHERS	(includin	g Author, Title, Da	te, Pertinent Pages,	Etc.)						
	B1											
					n denydrogenase to <i>In.</i> , 220(2):330-3 (19		e results in a	an inactive				
	B2	Etzioni, A. et a	l., "Brief re	eport: recurrent se	vere infections caus		ovel leukocy	te adhesion				
	B3			Med., 327(25):1789	<u> </u>	otiono " in	Duridina Ni	· olo otido				
	B4	John Wiely and Sons, New York (1987)										
	D-4		Ghosh, D. et al., "Three-dimensional structure of holo 3 alpha,20 beta-hydroxysteroid dehydrogenase: a member of a short-chain dehydrogenase family," <i>Proc. Natl. Acad. Sci. U S</i>									
		A., 88(22):1006	34-8 (199	1)								
	85			are of human estro 3(5):503-13 (1995	ogenic 17 beta-hydro	xysteroid	dehydrogei	nase at 2.20				
	B6				of guanosine diphos	sphate L-f	ucose," J. E	liol. Chem.,				
	B7	236:2389-2393	 		in hinhand 2.2 diff.	d== d:=4 O	0 dahadaa					
	, 				cis-biphenyl-2,3-dihy Sci., 7(6):1286-93 (3-aenyarog	enase from a				
	B8		al., "Short	-chain dehydroger	nases/reductases (S	DR)," Bio	chemistry, 3	4(18):6003-				
	B9	13 (1995) Kansas G.S.	'Selectins	and their ligands	current concepts an	d controv	ersies " Rlo	od				
		88(9):3259-87	(1996)									
	B10			•	ficiency Type II is a g fucosylation is not re	•						
			•		Invest. 101(11):243	•		rolling on				
	B11				nechanistic propertie	s of muta	nt dihydrop	teridine				
	B12			m., 271(7):3437-4 a program to prod	4 (1996) uce both detailed an	d schema	atic plots of	orotein				
		structures," J. A	Appl. Črys	st., 24:946-950 (19	91)							
	B13	Lesk, A.M., "N	AD-bindin	g domains of dehy	drogenases," Curr.	Opin. Stru	ıct. Biol., 5(6	6):775- 83				

Examiner

(1995)

Date Considered

*EXAMINER:

Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ADDI ICANY EACCIN	IILE OF FORM PTO-1449	1 1167	DEPARTMENT OF	ATTY DOCKET NO			et 3 of 5		
REV 7-80		-COMI PATE	MERCE NT AND TRADEMAN OFFICE	€ GFN-5321DV		SERIAL NO. 10/090,8	BECEN!		
LIST OF	F PUBLICATIONS ((Use several shee	CITED BY ts if nece	APPLICANT ,	APPLICANT William S. Somer	s et al.		RECEIVE		
			May	March 4, 2002		1631	2002		
		U.S	S. PARENTED	CUMENTS		TECH	CENTER 1600/		
EXAMINER INITIAL	DOCUMENT NUMBER	DATE		NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE		
	<u> </u>		-	<u> </u>		<u> </u>			
	_	FORE	IGN PATENT	DOCUMENTS	 		Υ		
	DOCUMENT NUMBER	DATE		COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO		
					L	<u></u>			
				Date, Pertinent Pages,					
C1			ys and mechan crobiol., 48:223-	isms in the biogenesis 56 (1994)	of novel	deoxysugar	s by		
C2	Liu, HW. et al	., "Mechar	nistic roles of tyr	rosine 149 and serine emistry, 36(35):10675-		~	€ 4-		
СЗ	Mergaert, P. et	al., "The r	nodulation gene	nolK of Azorhizobium	caulinoda	ans is involv	red in the		
C4				nose," FEBS Lett., 40		<u> </u>	abiaa " Aata		
	Cryst., D50:869	•		a program for photore	eansuc mo	olecular grap	onics, Acta		
C5				nt of comparative mole	ecular mo	deling of ter	rtiary		
C6	Nakajima, K. et	structures of proteins," <i>Proteins</i> , 23(3):301-17 (1995) Nakajima, K. et al., "Crystal structures of two tropinone reductases: different reaction stereospecificities in the same protein fold," <i>Proc. Natl. Acad. Sci. U. S. A.</i> , 95(9):4876-81 (1998)							
C7	Obeid, J. et al.,	"Tyr-179	and Lys-183 are	e essential for enzyma m. Biophys. Res. Com	tic activity	of 11 beta-	•		
C8	Oppermann, U	.C. et al., "	Active site direc	cted mutagenesis of 3 ffects on short-chain d	beta/17 b	eta-hydroxy	steroid		
	reactions," Biod	chemistry,	36(1):34-40 (19	97)					
C9	Oths, P.J. et al. Carbohydr Res		•	echanism of the GDP-	-mannose	dehydratas	se reaction,"		
C10	Otwinowski, Z. Methods Enzyr	•	•	ys diffraction data coll	ected in c	scillation me	ode,"		
C11	Persson, B. et a	al., "Short-	chain dehydrog	enases/reductases" <u>in</u> Veiner et al. (Eds.), pp					
C12	Rafferty, J.B. e	Rafferty, J.B. et al., "Common themes in redox chemistry emerge from the X-ray structure of oilseed rape (Brassica napus) enoyl acyl carrier protein reductase," Structure, 3(9):927-38							
C13	member of the	short-chai	•	etase from Escherichia se/reductase family tha 1601-12 (1998)			•		
xaminer		· · ·	· · · - <u>/ · · · · · · · · · · · · · · · · · · </u>	Date Considered					
EXAMINER:				ot citation is in conformance idered. Include copy of this					

10/090,87 RECEIVE

from Escherichia coli," Biochemistry, 36(21):6294-304 (1997)

Date Considered

Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to

U.S. DEPARTMENT OF

LIST OF PUBLICATIONS CITED BY

(Use several sheets if necessary

ATTY DOCKET NO

GFN-5321DV

William S. Somers et al.

Examiner

*EXAMINER:

applicant.

Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to

COPY OF PAPEHS ORIGINALLY FILED

*EXAMINER:

applicant.